Remarks

Applicant respectfully requests reconsideration of this application as amended. Claim 27 has been amended. No claims have been cancelled or added. Therefore, claims 1-38 are presented for examination.

Claims 1-8, 10-13, 15-21 and 23-38 stand rejected under 35 U.S.C. §102(e) as being anticipated by Toebes, VIII et al. (U.S. Patent No. 5,959,690). In addition, claim 14 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Toebes, VIII et al. Applicant submits that the present claims are patentable over Toebes.

Toebes discloses a method for providing in a personal computing system random frame accurate access to an MPEG video stream at any frame. Toebes utilizes two separate buffers, a past buffer and a future buffer. Each of these buffers is capable of holding one frame at a time. (Toebes col. 4, lines 21-33). The frames in these buffers are continuously replaced by other reference frames in the bitstream during the course of decoding a group of pictures (GOP). Toebes further discloses examining a frame (the target frame) to be decoded and referencing an index to determine that particular frame's type and dependencies. Then, the target frame's reference frames are placed into the buffers. (col. 13, lines 41-43; col. 14, lines 29-34; Figs. 5-7). Toebes takes advantage of the set order of frames in a bitstream to determine which frames will be placed in a buffer. For each I, P, or B frames there is a process by which they are parsed and either displayed or placed into a buffer (see, e.g., Fig. 8). This process is done without regard as to the state of the buffers. For example, Toebes states that "we do not need to be concerned with the state of the MPEG player's past buffer. . . . the process of the invention merely assures that the I frame is parsed into the future buffer

and the streamer/player is poised to parse the next reference frame upon enablement of the display and resumption of normal play." (Col. 16, lines 29-37).

Consequently, due to the process of Toebes, reference frames in the buffers are continuously replaced by other reference frames in the bitstream. (Toebes, col. 4, lines 21-33; col. 12, lines 42-50). If it was desired to return to a dependent frame ("P" or "B" frame) that has already been displayed, such as in a frame specific access situation, the decoding process would have to be repeated because the required dependency reference frames would no longer be in the buffers.

Claim 1 of the present application recites:

> A method of processing a video stream, comprising:
> (a) detecting a request to randomly access a particular frame;
> (b) maintaining a list of frame dependencies identifying at least a set of frames required to decode the particular frame; and
> (c) determining based at least in part on the list of frame dependencies whether a decoded version of the particular frame is in a decoded frame cache, said cache configured to store an arbitrary number of previously decoded frames, and if it is not and if the particular frame has a frame dependency:
> (i) determining a frame dependency for the particular frame;
> (ii) determining which of the frames in the frame dependency are in the decoded frame cache;
> (iii) decoding any frame in the frame dependency that is not in the decoded frame cache and placing it in the decoded frame cache; and
> (iv) using at least one of the decoded frames in the frame dependency to decode the particular frame to create a decoded version of the particular frame.

Applicants submit that Toebes does not disclose or suggest determining whether a reference frame *is already in a decoded frame cache* and *making a decision based on that determination whether or not to decode a frame*, as recited in claim 1, part (c). First, Toebes

does not disclose determining whether any of the reference frames of a dependent target frame are already in the buffer. As noted above, the process of Toebes relies on the set order of frames in a bitstream and automatically places frames in a buffer based on a target frame's particular dependencies. Toebes does not disclose examining if a frame is already located in the buffer.

The process of the present application allows reference frames, once decoded, to remain in the cache. These reference frames are not bumped out by other reference frames found later in the bitstream. Accordingly, the cache can be referenced to determine if a frame is already decoded. Toebes does not disclose or suggest such a feature. Furthermore, because Toebes does not disclose determining whether a reference frame is already in a decoded frame cache, neither can Toebes disclose making a decision whether or not to decode a frame based on that determination. Therefore, Toebes does not disclose or suggest the features of claim 1.

For the reasons discussed above, Toebes does not disclose or suggest the features of claim 1. Claims 2-14 depend from claim 1 and include additional limitations. Therefore, claims 2-14 are also patentable over Toebes.

The independent claims 15, 26, 27, 33, and 37 also include similar features as claim 1, such as determining whether a reference frame is already in a decoded frame cache and making a decision whether or not to decode a frame based on that determination. As discussed above, Toebes does not disclose or suggest such features. Therefore, claims 15, 26, 27, 33, and 37 also are patentable over Toebes.

Claims 16-25, 28-32, 34-36, and 38 depend from independent claims 15, 27, 33, and 37, respectively, and include additional limitations. Therefore, claims 16-25, 28-32, 34-36, and 38 are also patentable over Toebes.

Claims 9 and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Toebes, VIII et al. in view of Proctor et al. (U.S. Patent No. 6,072,830). Proctor is only provided to teach a least recently used (LRU) policy. However, Proctor does not disclose or suggest determining whether a reference frame is already in a decoded frame cache and making a decision whether or not to decode a frame based on that determination. Likewise, as discussed above with respect to claim 1, Toebes does not disclose or suggest such features. Therefore, the failings of Toebes are not cured through any combination with Proctor.

Applicant respectfully submits that the rejections have been overcome and that the claims are in condition for allowance. Accordingly, applicant respectfully requests the rejections be withdrawn and the claims be allowed.

The Examiner is requested to call the undersigned at (303) 740-1980 if there remains any issue with allowance of the case.

Applicant respectfully petitions for an extension of time to respond to the outstanding Office Action pursuant to 37 C.F.R. § 1.136(a) should one be necessary. Please charge our Deposit Account No. 02-2666 to cover the necessary fee under 37 C.F.R. § 1.17(a) for such an extension.

Please charge any shortage to our Deposit Account No. 02-2666.

Respectfully submitted,

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